

LVIII.—*New Species of Fulgorids (Homoptera)*. By F. MUIR, Hawaiian Sugar Planters' Experiment Station, Honolulu, T.H.

THE types and paratypes of the species described below, with one exception, are in the British Museum collection. Measurements are from apex of head to apex of abdomen and from base to apex of one tegmen.

Cixiidæ.

Andes oldi, sp. n.

Male.—Length 3·3, tegmen 6 mm.

In profile frons and vertex slightly produced and subconical; lateral carinæ of frons not meeting at base or on vertex, median frontal carina distinct on apical half of frons. First segment of antennæ very short, broader than long, second segment not longer than wide. *Sc*, *R*, and *M* arising from basal cell, not forming a stalk; stem M_{1+2} shorter than stem M_{3+4} .

Lateral margins of pygofer very slightly and roundly produced. Genital styles flat, fairly broad, curved, and rounded at apex. Anal segment large, longer than broad, anus near apex, sides subparallel to anus, beyond which it is produced to a broad angle and curved ventrad. *Ædeagus* long, perianthium thin, subtubular, left side of apical half produced into a small flange with the two apical corners produced into small curved spines; a long thin spine from apex turned basad, parallel to perianthium and reaching to one-third from the base, a smaller one from the other side of the apex reaching about halfway down the perianthium; penis small, membranous.

Brown; legs light, abdomen darker. Tegmina hyaline; a brown mark at base reaching to middle of clavus, a brownish band across tegmen from the middle of costa to clavus, mottled fuscous over apical cells; veins same colour as membrane, except apices of apical veins, which are white, veins with many small brown granules bearing black macrotrichia. Wings hyaline, fuscous, with dark veins.

Female similar to male, but slightly darker in colour.

One male and one female from Blantyre, Nyassaland (*Dr. J. E. S. Old*, 21. v. 1910). There are two females from Mt. Mlanje (*S. A. Neave*) which may be this species, but I have not included them in the type-series as the male from that district may prove to be distinct.

Brixidia haglundii, sp. n.

In this genus the stem M_{1+2} is longer than the stem M_{3+4} .

Female.—Length 7, tegmen 9 mm.

This species has five apical *Rs* and six apical *Ms*, M_{1a} being present. Light brown. Tegmina hyaline, slightly fuscous, the infuscation darkest over apices of apical cells; at the apices of *Ms* there is a light mark stretching from M_1 to M_{4a} ; veins darker brown, spreading into membrane at cross-veins and apical cross-veins. Wings fuscous, with dark veins.

One female specimen from Gold Coast (*A. E. Evans*, 1918).

Brixia speciosa, sp. n.

In this genus $Sc + R + M$ form a common stalk, whereas in *Brixidia* *M* arises from the basal cell.

Male.—Length 4, tegmen 5.5 mm.

Lateral carinæ of frons meeting together at base of face, no median carina on frons, clypeus 3-carinate; vertex small, triangular, base about middle of eyes; second segment of antennæ distinctly longer than wide. Three apical *Rs*; five apical *Ms*, forking of M_3 and M_4 near *Mf*. Lateral margins of pygofer rounded, medio-ventral process conical in outline. Genital styles narrow at base, widest in middle where it is angular, apical half narrowed to a subacute apex. Anal segment large, fairly broad anus near apex, where segment is broadest, beyond anus curved ventrad, the apex being slightly emarginate with a small projection at each corner of emargination.

Stramineous; three small dark marks on frons and genæ in front of eyes, a slight fuscous band on front femora and tibiae. Tegmina hyaline, yellow with some colourless areas, a triangular colourless area through costa near base with a smaller and more obscure one slightly distad, a band across the middle, a small area in apical cells and a larger one over media and cubitus. Five distinct round black spots along hind margin, the basal one the largest, raised and shiny, situated in cubital area just apical of clavus, the second in cubitus, third between *Cu* and M_{4a} , the fourth and fifth between M_{4a} and M_3 , a minute white dot between each black spot; the M_{1+2} , M_3 , and M_4 level with the spots white, margined with a fine fuscous line on each side; apical cross-veins brown; veins with minute granules bearing black macrotrichia. Wings hyaline with light veins.

Female similar to male. Pygofer about as wide as long,

flat, ovipositor complete, projecting beyond end of abdomen, anal segment small.

Described from one male and one female, the male from Mt. Mlanje, Nyassaland (*S. A. Neave*, 4. xii. 1912), and the female from South-east Katanga (*S. A. Neave*, 29. ii. 1907).

Brixia stannusi, sp. n.

Female.—Length 3, tegmen 5 mm.

Head as in *B. speciosa*, the 2nd segment of antennæ not quite so long. Tegmina typical. Lateral margin of pygofer rounded, medio-ventral process small, angular. Genital styles fairly large, narrow at base and slightly increasing in width, the apex produced into two processes forming a sub-crescent, the outer process larger than the inner. Anal segment reaching to apex of genital style, longer than broad, slightly widened to apex which is rounded.

Yellow; three small black marks in front of eyes. Tegmina hyaline, slightly ochraceous; cross-veins and apical cross-veins brown, the apical margin dark, apices of apical veins light; veins with small granules the same colour as membrane. Wings hyaline with brown veins.

One male from Zomba, Nyassaland (*H. S. Stannus*, July 1914).

Mnemosyne cubanæ, Stål.

Mnemosyne, Stål, Hem. Afr. iv. p. 150 (1866), no species mentioned; Stål, Berl. ent. Zeit. (1866), type-species *cubanæ* described; Fowler, Biol. Centr.-Amer., Hom. i. p. 102 (1904); Distant, Faun. Brit. Ind., Rhyn. vi. p. 33 (1916).

This genus was described and placed by Stål next to *Cajeta* in the Dictyopharidæ, but both these genera belong to the Cixiidæ. Both Fowler and Distant redescribed the genus, but there was some confusion, as the five mesonotal carinæ are absent or obscure in some species, or appear as three. The chief distinction between this genus and *Oliarus* or *Cixius* lies in the branching of *M*; in *Mnemosyne* the forking of *M*₁ and *M*₂ is some distance away from *Mf*, but the forking of *M*₃ and *M*₄ is close to *Mf*; in *Oliarus* and *Cixius* the reverse is the case, *M*₁ and *M*₂ forking near to *Mf* and *M*₃ and *M*₄ some distance from it. The median carinæ on frons and clypeus are often obscure or absent. In most of the species granules bearing macrotrichia are present in greater or less numbers on the membrane, especially in the apical cells.

The type-specimen is a male. The anal segment is large, a little longer than broad, sides rounded, broadest slightly

before apex. Lateral margins of pygofer acutely angularly produced. Genital styles broad at base, narrowing to apex, inner margin convex, outer margin convex on basal half, concave on apical half, at the apex there is a small process at right angles to the apex.

Sc with three branches; *R* with three; *M*₁ and ₂, ₃ and ₄, _{4a}; *Cu*₁, _{1a}; a cross-vein in clavus near base between first claval and suture; very few granules in cells. Mesonotum with five very obscure carinæ; vertex without any transverse or oblique carinæ; clypeus without a median carina. There is a specimen marked "var." in the type-material which I consider to be the female. In it the pygofer is wider than long; the anal segment is missing; the ovipositor is as long as the pygofer or slightly longer.

Mnemosyne philippina, Stål.

The type is a female. It has no median carina on clypeus; vertex with small oblique carinæ at apex, the mesonotum with five distinct carinæ. Anal segment longer than wide, narrow. Pygofer wider than long; ovipositor slightly longer than pygofer; pregenital plate truncate on posterior margin. There is a male specimen from Darjeeling, India, with the type-material which represents a distinct species.

I have two female specimens from Surigao, Mindanao (*Baker*, no. 17525).

Mnemosyne planiceps (Fabr.).

I have one male specimen from Central America which agrees with specimens in the British Museum identified as *planiceps*.

The median carinæ on frons and clypeus and three mesonotal carinæ distinct. The pygofer compressed, lateral margin produced angularly with a small emargination near the anal angle; medio-ventral process wider than long, subquadrate and produced into a little point in the middle of apical margin. Anal segment long, thin, tubular with the anus at apex, below the anus the apical margin produced into a large spine at right angles to anal segment and a little longer than half its length. Genital styles boomerang-shape, widest on basal half, apex narrow, truncate, inner margin concave, outer margin convex. Periandrium long, slender, subtubular with a spine arising from base laying alongside and about half the length of periandrium; penis represented by two small membranes at apex. The periandrium is amalgamated to the apodeme of the penis.

Mnemosyne efferratus (Walker).

I have one male specimen from Singapore (*Baker*) which appears to be this species. The genitalia are on the same plan as *planiceps*. The lateral margins of the pygofer are produced angularly and slope up to the base of the anal segment without any anal angle; the medio-ventral process is angular. Anal segment long, tubular, with the ventral apical area produced into a long strong spine about half the length of anal segment. Genital styles longer than broad, straight, apex rounded, sides subparallel to near base, where it suddenly narrows. Aedeagus subtubular, fairly short and thick, a large curved spine arises on the right side from basal half and a small one projects slightly beyond apex.

Mnemosyne maculipennis, sp. n.

Male.—Length 10, tegmen 10 mm.

Oblique carinae on vertex distinct; five distinct mesonotal carinae; median carinae on frons and clypeus missing or very obscure, median ocellus distinct. Forking of *Sc+R* near base; forking of *M* slightly before apex of clavus, six apical *Ms*, 1, 2, 2a; 3, 4, 4a; *Cu* not touching *M*.

Dark brown, frons shiny, light at base of vertex and middle of pronotum, also on hind legs and pygofer. Tegmina hyaline, veins dark; membrane of cells as well as veins thickly dotted with dark granules bearing black macrotrichia, these being most numerous in apical half. Base and outer margin of clavus and a spot at apex fuscous brown; three small marks in costal cell and the stigma, two spots near base, a faint and broken mark over nodal line and another from hind margin near clavus to apex of *R*, and four small spots in *M* and *Cu*, apical cells all fuscous brown. Wings hyaline with brown veins.

Sides of pygofer produced into a fairly long process with rounded apex, with a small rounded projection between it and the base of anal segment; medio-ventral process subdiamond-shape. Genital styles from ventral view fairly broad, slightly curved, subequal in width to apex, which is rounded; in lateral view with a slight angular projection on the outer margin before apex. Anal segment fairly broad, dorsal surface convex, ventrally concave, apex slightly narrowed and truncate. Aedeagus complex, perianthium drawn out into a thin plate, which is curved to the left and has an irregular serrate edge of four or five teeth: from the apex arises a small plate, from which extends two curved spines,

one reaching to the base of the periandrium and the other half as long; another small curved spine arises from the apex and a fourth a little lower down, which take a complete curve round the periandrium near the apex; the penis is of medium size, membranous.

Female.—Length 10, tegmen 12 mm.

In general build and colour similar to the male. Pygofer wider than long, ovipositor incomplete, sheaths a little longer than pygofer, ovipositor a little shorter. Anal segment small, longer than wide, about half the length of pygofer.

Holotype male, allotype female, from British East Africa. Described from three males and five females from B.E.A. (*S. L. Hinde*, 1913); four males and eleven females from Monkey Bay, Lake Nyassa (*W. A. Lamborn*, 7. xi. 1915), one female from Umfili River, Mashunaland (*Guy Marshall*), and one male from Mozambique (*F. Muir*).

Mnemosyne evansi, sp. n.

Female.—Length 8, tegmen 9 mm.

Oblique carinæ on vertex and median carinæ on frons and clypeus distinct; mesonotum with five distinct carinæ. *M* with five branches, 1, 2 and 3, 4, 4a; *Cu* not touching *M*. Brown slightly mottled with lighter markings. Tegmina hyaline, slightly yellowish, veins darker brown, very few granules bearing black macrotrichia on membrane; a few small brown marks at apex of *R*, *M*, and *Cu*, three small dark marks in costal cell, one in middle of clavus, one at fork of *Cu*, and one at fork of *M*. Wings hyaline, veins brown; slightly fuscous along apical margin.

The female genitalia is similar to *M. maculipennis*.

Described from two females from Gold Coast (*A. E. Evans*, 1913). This species differs from *M. camerunensis*, Dist., in its darker colour and the presence of some granules on the membrane of tegmina, and from *M. maculipennis* by its smaller size, lighter colour, and by having so few granules on the membrane of tegmina.

Mnemosyne camerunensis, Dist.

One specimen without abdomen, which agrees with the type of this species. It is from Oshogbo, South Nigeria (*Dr. T. F. G. Mayer*).

Mnemosyne punctipennis, Dist.

One female specimen from Bang Bo, Indo-China (*R. V. de Salvaza*, 25. iv. 1915), which agrees with the type-specimen.

Borysthenes mlanjensis, sp. n.

Female.—Length 3, tegmen 5 mm.

Sc + *R* forming a short stalk, *M* arising from basal cell at the same spot as *Sc* + *R* and forking about level with the apex of clavus, with five apical cells, $M_1, 1a, 2; 3, 4$. Claval vein joining commissure before apex; tegmina but slightly tectiform when at rest, overlapping beyond apex of clavus.

Ovipositor complete, longer than pygofer, which is small and longer than broad with a longitudinal depression. Anal segment very small.

Light yellow; eyes dark brown, apex of labium dark, ovipositor brown. Tegmina hyaline, slightly opaque with waxy secretion, veins yellow except where the dark spots are, a dark mark at base of *M*, one at fork of *Cu*, a light one in middle, another at stigma, and another larger one near apex of costal cell extending into subcostal; a small spot slightly distad of *Sc* + *R* fork, a small round spot between *R* and *M* at apex; the cross-veins between the fork of M_1, M_2 and the fork of M_3, M_4 and over cross-vein between *M* and *Cu*, fuscous. Wings hyaline, opaque with waxy secretion, a black spot between *R* and *M* near middle, apical cells fuscous, veins yellow, slightly fuscous.

Described from four females from Mt. Mlanje, Nyassaland (*S. A. Neave*, 5. i. 1914). This appears to be the first species of this genus to be reported from Africa.

Derbidæ.

Zoraida fulgans, sp. n.

Male.—Length 7, tegmen 16, wings 5 mm.

The basal median sector joined to the cubitus, making the latter four-branched; wing about one-third the length of the tegmen. Antennæ cylindrical, slightly longer than face.

Lateral margins of pygofer broadly angular, medio-ventral process conical in outline. Anal segment slightly longer than broad, apex with a slight emargination in middle, making it bilobed. Genital styles about as long as anal

segment, longer than broad, inner margin in the middle, produced into a small quadrate process broader than long and curved inward; outer margin nearly straight, slightly curved on apical half, apex bluntly pointed.

Head and thorax light brown mottled with lighter markings, legs light brown, abdominal tergites darker brown, sternites lighter. Tegmina hyaline, veins brown slightly expanded at apices; costal, subcostal, and radial cells, basal portion of median cell, base of cubitus and apical cells reddish brown, a darker brown mark on Cu_{1a} . Costa and apical margins reddish, apical veins fuscous spreading into cells, except at apex where the veins are reddish bordered with white; small lighter spots in costal cells and along subcostal and radial veins. Wings hyaline with brown veins.

Described from one male in the Hope Department, Oxford University Museum, from Ambinanindrano, Mahanoro, Madagascar, captured by the Venerable Archdeacon G. K. Kestell-Cornish, now Bishop of Madagascar.

This fine species belongs to the typical subgenus and comes into the *sinuata* group. It is the first species to be captured in Madagascar of this large genus distributed all over the tropics of the Old World and the Australian-Malayan islands.

Mysidioides africana, sp. n.

Female.—Length 4, tegmen 8, wings 5 mm.

Subantennal process with wide base, longer than broad, rounded; shoulder-keel well developed; face linear, the carinae contiguous. Antennae much shorter than face, subpeariform. Pregenital plate large, flat, posterior margin angularly produced in middle.

Light yellow; eyes brown; front legs light brown, middle legs with a brown longitudinal line, hind legs brown at apex of tibiae. Tegmina hyaline, slightly opaque with waxy secretion; four light brown marks on costa and fuscous marks on apical margin; faintly fuscous from apex of clavus to middle of costa and along fork of clavus, along median cross-veins and the middle of media to costal margin near apex; veins darker than membrane. Wings hyaline with light veins.

Described from one female from Ibadan, South Nigeria.

Dictyopharidæ.

Miasa wallacei, sp. n.

Male.—Length including cephalic projection 12, tegmen 11 mm.

Cephalic projection straight, not curved, otherwise in colour and build similar to *M. smaragdilinea*, Walk.

Anal segment large, steeply tectiform, and the sides very long on apical half. In lateral view somewhat hatchet-shape, dorsal margin straight with the apex at right angles to it, narrow at base, rapidly widening to a little beyond middle, beyond which the margin straight, the truncate apex being about as long as from base to anus and five or six times wider than base.

One male from Biserat, Siam, Malay States.

The type of *M. smaragdilinea*, Walk., is a male from Mt. Ophir, collected by Wallace. It appears to be similar to specimens from Borneo, but dissections may show phallic differences. The anal segment is very distinct; in lateral view the apex is slightly wider than base and the lateral margin is nearly straight.

LIX.—*Three new Fishes from Yunnan, collected by Professor J. W. Gregory, F.R.S.* By J. R. NORMAN.

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Schizothorax yunnanensis.

Depth of body about equal to length of head, which is $4\frac{3}{5}$ in length of body. Upper profile of snout decurved. Breadth of head about twice in the length. Length of snout $\frac{2}{3}$ post-orbital part of head. Diameter of eye $5\frac{1}{4}$ in length of head, interorbital width $3\frac{1}{2}$. Mouth inferior; lower jaw apparently without horny covering; upper lip with a median prolongation; fold of lower lip interrupted; two barbels on each side, subequal, $\frac{3}{5}$ diameter of eye. Scales small and irregularly arranged; 102 larger scales in lateral line; lower part of thorax and abdomen naked, except for some scattered imbedded scales. Dorsal IV 9; the fourth simple ray not very stout, $\frac{2}{3}$ length of head, moderately serrated in its lower half, articulated and slender above; origin of dorsal a little in front of base of pelvics, about equidistant from base of caudal and tip of snout. Anal III 5. Pectoral extending